

Debbie Beadle

From: Steven Neugebauer <steve@snrcompany.com>
Sent: Friday, November 16, 2012 4:33 PM
To: 'Jon Simpson'; Debbie Beadle
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Subject: RE: Follow up to Planning Commission - Public Hearing, Nov. 15

EXHIBIT NO. 262

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Jon:

I am a past planning commissioner chairperson (Duvall) and your statements regarding City revenues and older residences is a problem we have run into in Duvall. Without new development, the tax revenues on existing homes eventually moves from black to red (in as little as 5 years in some areas). This is even worse in an economy where housing prices have dropped significantly. The revenues generated from permits, impact fees, and other fees associated with development and the conversion of undeveloped land to developed land is one of the primary mechanisms that drives a municipalities economic engine. This combined with a balance of commercial and industrial to zoned areas fills in the rest. We found that it is extremely important to have a significant amount of "family wage" jobs in the municipality because this means that those that live in the municipality work there, spend there, and get more involved. Regardless, new development is critical to a municipality's economy and making it difficult to develop in a municipality can simply mean that development goes elsewhere and it eventually means that taxes will need to rise simply to keep municipal operations afloat. There are several Cities that are realizing this now (especially in this economy, with some Counties even declaring bankruptcy), however, it is better create balanced codes that promote development while protecting the natural resources. However, as we all know, the most important part about environmental codes is the use of the best science and in the case of all GMA related activities that pertain to critical areas this means Best Available Science, not the precautionary principal, not pseudoscience, or non-science.

In reality, the City of Sammamish has one permitted MS4 system (municipal separate storm sewer systems), however, many property owners have residential storm sewer systems that are exempt under federal code (from permitting). The City's storm water is regulated by the Clean Water Act and the State of Washington Water Pollution Control Act, with the Clean Water Act requiring a Phase II Municipal Stormwater NPDES permit that regulates all of the City's MS4 systems to their permitted outfalls.

The new provisions of the Phase II Municipal Stormwater NPDES permit do require more use of Low Impact Design (LID) technologies on new developments, which does include a lot of infiltration, evapotranspiration, and other methods to handle storm water. However, as you indicated, there can be problems with these systems if the subsurface geology and hydrology are not conducive to the use of this technology. Additionally, if too much surplus storm water is infiltrated, problems can arise because the hydrologic balance of the area can be shifted, which can lead to significant problems, especially on down slope properties or properties where there is little slope.

Contrary to popular belief, the most common type of subsurface flow is unsaturated zone flow and this is analogous to "underground runoff" (Horton's overland flow model). This means that just because you infiltrate storm water is "disappears", it is now below the ground surface and is typically flowing as "underground storm water" (not ground water). This means that a lot of the infiltration facilities are simply moving water underground rather than simply recharging the aquifer. This can cause problems in some areas, especially for downgradient property owners but it can also create liabilities for those who infiltrate because this is still storm water and the source is from manmade facilities.

Regardless, you are correct about the municipal discharges to the lake, which are permitted, but unmonitored (although construction storm water permits require monitoring as do industrial storm water permits), which means no one knows how much pollutants are discharged into the lakes or marine water bodies from these facilities. However, it is clear that the lakes are being used as part of the municipal MS4 system, because they are controlled lakes and part of the capacity of the storm sewer system is calculated as storage in the lakes. Municipal storm sewer systems have a much greater chance of having high pollutant loads than private storm water systems on residential properties (this is one of the reasons municipal storm water requires a permit under the Clean Water Act and private residences do not).

One of the consequences of using the lakes for storage and designing infiltration facilities around kettle lakes is that you are creating a potential lake flooding problem (the municipalities factor in how much water they will store in the lake in acre feet and surface water in MS4 systems moves very rapidly) that can manifest themselves rapidly. This is followed by the unsaturated zone flow from the infiltration facilities (this can move much faster than ground water), exasperating lake flooding. We see this on many urban lakes, ALL of which are used as part of municipal storm water facilities (all are permitted MS4s). Lake Sammamish, Lake Washington, Phantom Lake, and most other urban lakes are controlled lakes and these lakes receive a tremendous amount of permitted MS4 storm water. For the most part, none of the discharge points are monitored, therefore the actual pollutant loads are unknown.

As you may know, the element phosphorous was first discovered in urine. The most abundant source of phosphorous in soluble form is from living organisms, including plants, animals (including fish), and all other living things. We have found that the primary source of phosphorous in lakes is from the animal life, especially the fish, which do not use restrooms and use the environment they live in for these purposes. Ducks, geese and other water fowl also provide significant amounts of phosphorous, as do decaying plants and animals (including microorganisms). Until we know more about the natural causes for phosphorous in a water system it is very difficult to focus on the manmade sources. Also in reality, the technology used in septic systems is not conducive to contributing free nitrogen or phosphorous to surface water bodies, because most systems are reducing (anaerobic and reducing) and these work like wetlands do, removing available nutrients such as nitrogen and phosphorous (wetlands have aquatic conditions per the Corps and these are similar to the conditions in septic systems). Also, these systems are placed above ground water and unsaturated zone flow and are designed to prevent nutrients from being present in the leach field water that is infiltrated.

In every study we have conducted and studies we have reviewed, including studies that have used DNA to determine the species that generated the fecal coliform bacteria, we typically find that fecal coliform bacteria, nitrogen, and phosphorous are actually tied to the natural causes (wildlife, including fish) rather than human activities.

Ecology and other “departments” (state) and agencies (federal) typically ignore the natural sources for these “nutrients”, and go on “witch hunts” to place the blame on human activities. Even more odd, the WDFW routinely takes dead salmon and dumps them into streams to simulate what happens after spawning. When they do this, they release a tremendous amount of nutrients into the water from the decaying remains of the fish. This includes phosphorous, nitrogen, and many other nutrients (as you stated, bones are made of a combination of calcium and phosphorous, this is the reason for the “bone meal” fertilizer which is a source of phosphorous). However, studies have found that the use of fertilizer on lawns is not necessarily a significant source of nutrients, in fact, prudent use of fertilizers leads to lush lawns that can actually remove more pollutants. Check out the USGS report at this URL:

<http://wi.water.usgs.gov/pubs/wrir-02-4130/wrir-02-4130.pdf>

Soluble phosphorous, nitrogen, especially in the form of ammonia, and other nutrients are much less likely to be caused by human activity and more likely to be caused by the animals, plants, and microorganisms in and around the water body than human sources. Those that live in shoreline areas are good stewards and justly so, they have an investment and they live in these areas for a reason, because they enjoy these areas. Additionally, roof drainage and other impervious surfaces on residential properties do not have potential sources of pollutants as roads, industrial, and commercial facilities do.

Also, in reality, pollutants are much more likely to be introduced from municipal sanitary sewer lines than they are from onsite septic systems. We have yet to find a municipal sanitary sewer system that does not leak and this sewage follows the sewer lines to low points where the sewage is transported through the unsaturated zone into the lakes, ponds, streams, rivers, and the marine shoreline areas (it also infiltrates downwards towards the ground water). There is no treatment of the sewage in the sewer lines until it gets to the treatment plant, whereas onsite septic systems have onsite treatment. We have seen raw sewage from the sanitary sewer lines entering Shady Lake in Renton and the Puget Sound in Federal Way (flowing out of the ground as unsaturated zone flow, somewhat like "springs"). We have also seen it being injected directly into ground water and flow into MS4 system ditches (that drain to the Green River) in the Auburn area. We have collected unsaturated zone flow downgradient of the low points in these lines via piezometers and found high levels of phosphorous, nitrogen, and other sewage related pollutants including fecal coliform (and high levels of e. coli).

If any human activity may be impacting the water quality of the surface water features, this may be the most likely. However, it is still minor compared to what "mother nature" contributes to these water bodies.

Cheers!

Steve

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From: Jon Simpson [mailto:jwsdesign53@gmail.com]
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Subject: Follow up to Planning Commission - Public Hearing, Nov. 15

I attend the Nov. 15th Planning Commission Public Hearing, listened to many of the comments made and offer the following to be added to the comments,

1. Attempting to counteract or correct current environmental impacts by focusing solely on new housing construction overlooks the vastly higher percentage of existing housing.
 - a. Existing housing in the City of Sammamish generally has two types of storm water systems,
 - i. Surface water collected by roof systems, driveways and other hard surface areas is left to infiltrate on-site by natural conveyance to pervious surfaces such as lawn and other landscaped areas or natural forested portions of the property,
 - ii. Surface water is collect and conveyed to a retention pond type system where it is either infiltrated and or diverted to an out fall device connected into the city storm water conveyance system eventually making its way to Puget Sound via Lake Sammamish

- iii. Both current systems impact the environment through infiltration into the natural ground water systems and flow in the same direction but by different means.
 - b. Existing housing contribute much higher levels of Phosphorus into the environment than the combined quantity of new housing ever will. Existing homes which are using an on-site sanitary sewer system (septic drainfield system) contribute extremely higher levels of phosphorus into the ground water which can migrate into streams and lake systems more so than new houses which are connected into a public sanitary sewer system.
- 2. The major contributor to pollution in our urban, suburban and rural areas are public owned roadways.
 - a. East Lake Sammamish Parkway has numerous (30-50) culverts diverting roadway surface water run-off which is generally left untreated and divert these untreated pollutants directly into Lake Sammamish. In just one case which I am familiar with the winter rain run-off from one culvert located on this roadway would cause extensive and harmful erosion and sediment to flow unchecked into the lake with every significant weather event.
 - b. Every major roadway including Beaver Lake Drive are diverted into the closest lake and stream. Most local ponds, lakes and streams are a part of the City of Sammamish Storm Water Conveyance System as defined in their required federal storm water permits.
 - i. As an example, Beaver Lake is used for storm water storage by the city which has artificially altered the shoreline level (ordinary high water mark, OHWM) of the lake. King County installed an outlet control device to regulate the outflow from the lake into the stream which flows out of the lake and into Lake Sammamish. Other roadways also connect into the stream and other formerly natural conveyances. It can be stated that most if not all natural water bodies in the City of Sammamish are no longer natural occurring but are altered by storm water influence.
 - ii. Sammamish roadway storm water can and does contribute hydrology to local and isolated wetlands which is either not authorized under the state and federal laws or is not be factored when calculating a wetland area influenced by storm water. City of Sammamish has not properly addressed storm water hydrology in it's critical area regulations and is allowing staff to consider storm water as a part of the natural hydrology of wetlands and other critical areas such as altered OHWM determinations.
- 3. If the city desires to reduce the amount of Phosphorus being conveyed through it's storm water systems and making it into Lake Sammamish, it should start by regulating the amount of phosphorus based fertilizer being used by all it's citizens (post construction phase) rather than attempting to restrict future development of housing and hoping that alone reduces those levels. A major reasoning why most jurisdictions such as Sammamish do not pursue more indepth regulation of it's existing housing and citizenry is it can have a negative impact on it's elected officials...ie, over regulated and unhappy property owners unelect officials who are responsible for said over regulation. New housing has no such entity (property owner) at the time it is developed and therefore only has the voice of the developer who is typically not a citizen of the jurisdiction thus over regulation can be justified by elected officials without risk and most times is viewed as favorable by a high percentage of the current citizen base.
- 4. In cities like Sammamish, there is a high inventory of existing and older houses whose property tax revenues tend to not cover the capital resources necessary for sustaining things like schools, roads and emergency services. Studies have shown that when new houses are constructed in a jurisdiction they bring more than just immediate and temporary construction related jobs but actually contribute to long term employment and an enhanced revenue base to offset the existing housing shortfall...both in the short term as well as the long term. A vibrant community requires a percentage of new housing to help it provide services to all it's citizens. The home building industry of Washington is made up of mostly small businesses and yet combined, they make up the third largest employment sector of our states economy led only by Boeing and Microsoft. Both these other business entities have their corporate offices based outside of Washington State and therefore do not contribute as much to our local and state tax revenues as the home building industry businesses do and, the small business community is more regulated as well. The home building industry builds the structures that house the employees of all businesses of this state and is therefore a vital part of each of our local communities.

As a fellow Planning Commissioner who also faces how to best address the regulatory process and serve the citizens of my community I recently went through a reappointment interview with the mayor, deputy mayor and planning commissioner chair. The mayor asked a very straight forward question of me, “Jon, is it the responsibility of the commissioners or the staff to write regulatory language?” My response was the following, “That it is the responsibility of the appointed commissioners to craft and develop regulatory language with the support of the staff, it is the responsibility of staff to verify compatibility of regulatory language developed by the planning commission with other current local, state and federal regulations. To have it any other way means the commissioners are subjugating their role and responsibility to staff. An affective staff understands and provides their own role and responsibility to the commissioners without bias or underlying agenda...this serves the citizen view for the community in the best of manner and methods.” This was my statement and reflects my own opinion to the duties we take on as commissioners, yours may vary but, I wanted to share that thought and perspective with you.

Biological role of Phosphorus

Inorganic phosphorus in the form of the phosphate PO_3^{4-} is required for all known forms of life,^[53] playing a major role in biological molecules such as DNA and RNA where it forms part of the structural framework of these molecules. Living cells also use phosphate to transport cellular energy in the form of adenosine triphosphate (ATP). Nearly every cellular process that uses energy obtains it in the form of ATP. ATP is also important for phosphorylation, a key regulatory event in cells. Phospholipids are the main structural components of all cellular membranes. Calcium phosphate salts assist in stiffening bones.^[9]

Living cells are defined by a membrane that separates it from its surroundings. Biological membranes are made from a phospholipid matrix and proteins, typically in the form of a bilayer. Phospholipids are derived from glycerol, such that two of the glycerol hydroxyl (OH) protons have been replaced with fatty acids as an ester, and the third hydroxyl proton has been replaced with phosphate bonded to another alcohol.^[54]

An average adult human contains about 0.7 kg of phosphorus, about 85–90% of which is present in bones and teeth in the form of apatite, and the remainder in soft tissues and extracellular fluids (~1%). The phosphorus content increases from about 0.5 weight% in infancy to 0.65–1.1 weight% in adults. Average phosphorus concentration in the blood is about 0.4 g/L, about 70% of that is organic and 30% inorganic phosphates.^[55] A well-fed adult in the industrialized world consumes and excretes about 1–3 grams of phosphorus per day, with consumption in the form of inorganic phosphate and phosphorus-containing biomolecules such as nucleic acids and phospholipids; and excretion almost exclusively in the form of phosphate ions such as H_2PO_4^- and HPO_4^{2-} .

4. Only about 0.1% of body phosphate circulates in the blood, and this amount reflects the amount of phosphate available to soft tissue cells.

Bone and teeth enamel

The main component of bone is hydroxyapatite as well as amorphous forms of calcium phosphate, possibly including carbonate. Hydroxyapatite is the main component of tooth enamel. Water fluoridation enhances the resistance of teeth to decay by the partial conversion of this mineral to the still harder material called fluoroapatite.^[9]

Phosphorus deficiency

In medicine, low-phosphate syndromes are caused by malnutrition, by failure to absorb phosphate, and by metabolic syndromes that draw phosphate from the blood (such as re-feeding after malnutrition) or pass too much of it into the urine. All are characterized by hypophosphatemia, which is a condition of low levels of soluble phosphate levels in the blood serum, and therefore inside cells. Symptoms of hypophosphatemia include muscle and neurological dysfunction, and disruption of muscle and blood cells due to lack of ATP. Too much phosphate can lead to diarrhoea and calcification (hardening) of organs and soft tissue, and can interfere with the body's ability to use iron, calcium, magnesium, and zinc.^[56]

Phosphorus is an essential macromineral for plants, which is studied extensively in edaphology in order to understand plant uptake from soil systems. In ecological terms, phosphorus is often a limiting factor in many environments; i.e. the availability of phosphorus governs the rate of growth of many organisms. In ecosystems an excess of phosphorus can be problematic, especially in aquatic systems, resulting in eutrophication which sometimes lead to algal blooms.

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Note: this is email is being sent from jwsdesign53@gmail.com address which receives emails sent to jwsdesign@comcast.net as well. Either email address works for communicating with me. Thank you, JWS